

9. The method of claim 1, wherein the hot bait is heated by the heat produced during combustion reaction of the gaseous fuel with the oxygen gas.

10. The method of claim 9, wherein the hot bait is heated to a temperature at which the boule is directly formed.

11. The method of claim 1, wherein the gaseous fuel is premixed with a portion of the oxygen gas prior to being supplied to the combustion burner.

12. The method of claim 1, wherein supplying silane gas, a gaseous fuel, and an oxygen gas to the combustion burner includes providing an envelope of oxygen gas around the gaseous fuel.

13. The method of claim 1, wherein the boule has a chlorine concentration less than 10 ppm.

14. A method for preparing high-purity, bulk fused silica, comprising:

supplying silane gas, a gaseous fuel, and oxygen gas to a combustion burner;

forming silica particles by passing the silane gas into a flame formed by the combustion reaction of the gaseous fuel with the oxygen gas while maintaining the ratio of the flow rate of the gaseous fuel to the flow rate of the silane gas in a range from 12 to 30 and the ratio of the flow rate of the gaseous fuel to the flow rate of the oxygen gas in a range from 2.0 to 3.0; and

immediately depositing the silica particles onto a hot bait to form a boule.

15. The method of claim 14, wherein the gaseous fuel is methane.

16. The method of claim 14, wherein the gaseous fuel is hydrogen gas.

17. The method of claim 14, wherein the boule has a chlorine concentration less than 10 ppm.

**WEST****End of Result Set**

Generate Collection

Print

L6: Entry 1 of 1

File: USPT

Apr 30, 2002

US-PAT-NO: 6378337

DOCUMENT-IDENTIFIER: US 6378337 B1

TITLE: Method for producing bulk fused silica

DATE-ISSUED: April 30, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Brown; John T.	Corning	NY		
Dobbins; Michael S.	Painted Post	NY		
Heckle; Christine E.	Horseheads	NY		
McLay; Robert E.	Syracuse	NY		
Misra; Mahendra K.	Horseheads	NY		
Powers; Dale R.	Painted Post	NY		
Wasilewski; Michael H.	Corning	NY		

US-CL-CURRENT: 65/17.4; 65/414, 65/421

## CLAIMS:

What is claimed is:

1. A method for preparing high-purity, bulk fused silica, comprising:

supplying silane gas, a gaseous fuel, and oxygen gas to a combustion burner;

forming silica particles by passing the silane gas into a flame formed by the combustion reaction of the gaseous fuel with the oxygen gas while maintaining the ratio of the flow rate of the gaseous fuel to the flow rate of the silane gas no less than twelve and the ratio of the flow rate of the gaseous fuel to the flow rate of the oxygen gas no less than two; and

immediately depositing the silica particles onto a hot bait to form a boule.

2. The method of claim 1, wherein the ratio of the flow rate of the gaseous fuel to the flow rate of the silane gas is no greater than 30.

3. The method of claim 1, wherein the ratio of the flow rate of the gaseous fuel to the flow rate of the silane gas is in a range from 12.5 to 30.

4. The method of claim 3, wherein the ratio of the flow rate of the gaseous fuel to the flow rate of the oxygen gas is in a range from 2.0 to 3.0.

5. The method of claim 1, wherein supplying silane gas includes providing a shield of inert gas around the silane gas.

6. The method of claim 1, wherein the inert gas is nitrogen.

7. The method of claim 1, wherein the gaseous fuel is methane gas.

8. The method of claim 1, wherein the gaseous fuel is hydrogen gas.